Cooperation with the TFIAM on common tasks in the work plan
Report on Cost of Inaction

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Report on Costs of inaction (COI)

- A conceptual overview summarising existing literature complemented with own calculations,
- Responds to workplan item 2.1.7,

COI-report strives to answer:

- Question #1: Can we by now confidently estimate welfare effects of poor air quality?
- Question #2: How large are the costs if inaction on air pollution?
- Question #3: Are these costs expected to go up or down in the future?
- Question #4: Is there still room to reduce the costs of inaction even further?
- Question #5: Will human welfare improve if we do more?

COI-report structure

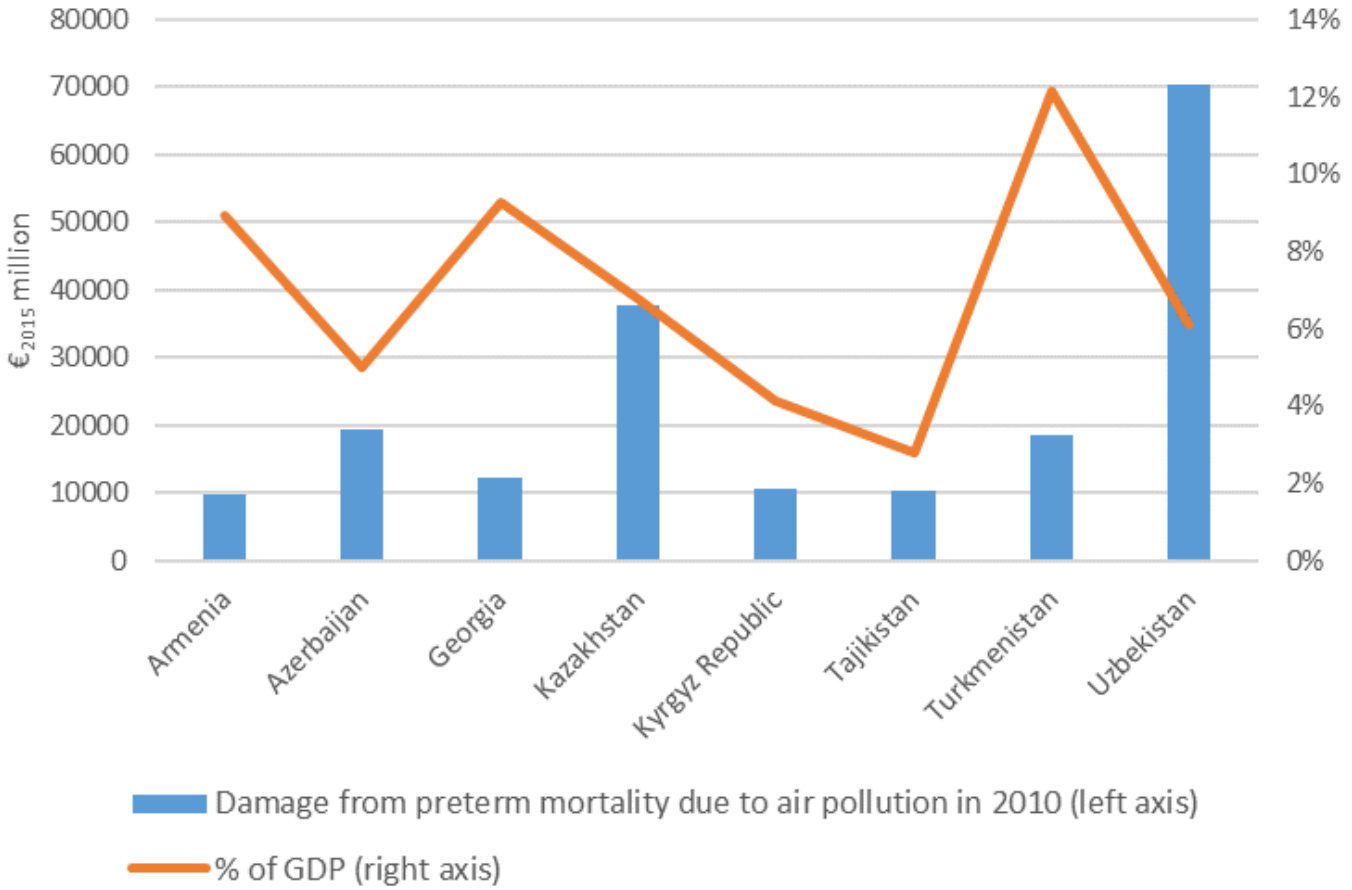
- Introduction, background, method,
- Results disaggregated over:

  Region: EECCA, South Eastern Europe, Western and Central Europe, North America, Global

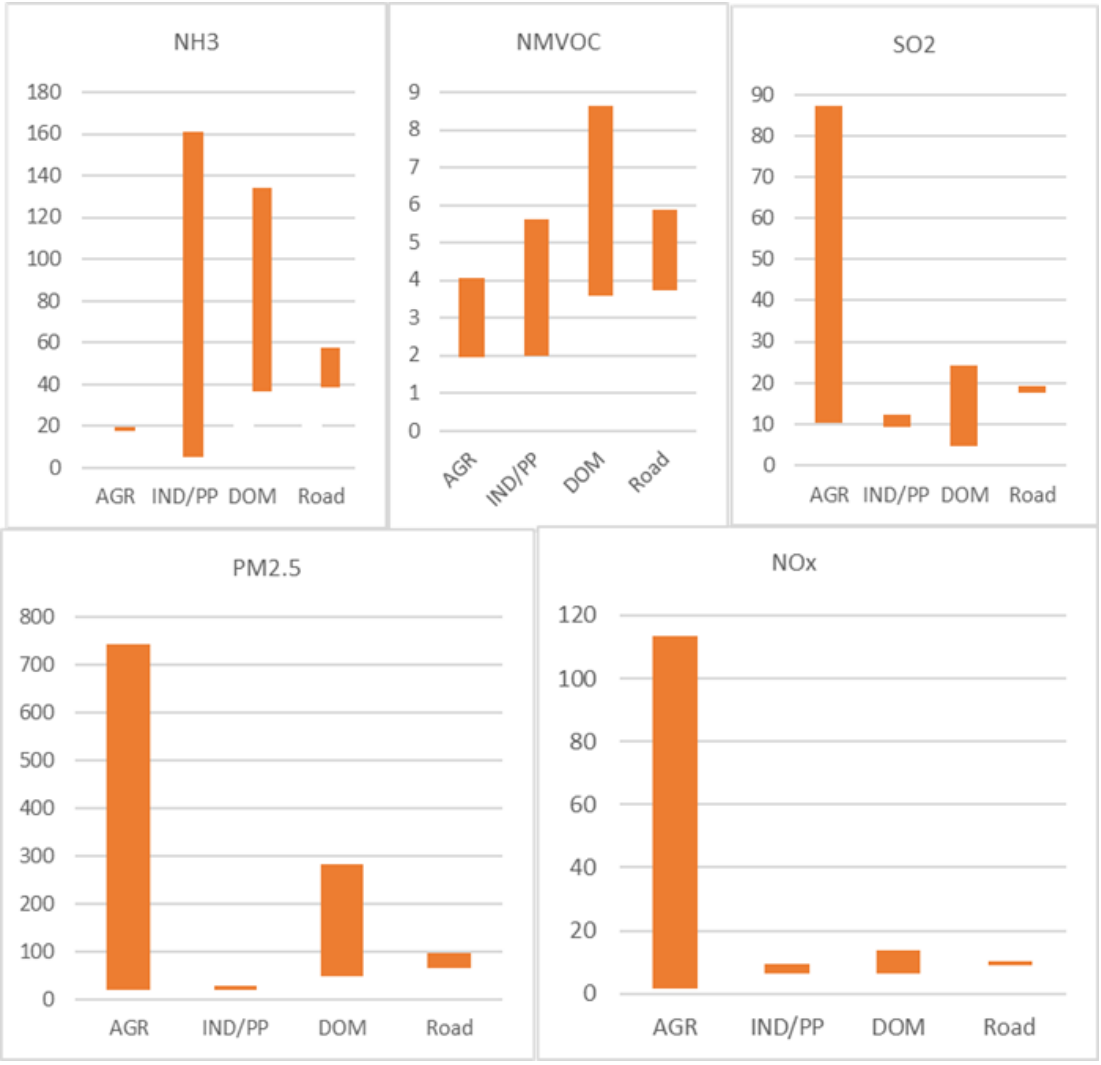
  Cost type: Total damage, Reduced labour productivity, crop damages, per sector, per pollutant
- How large is the monetized damage from air pollution?
- How much benefit in future from expected action?
- How large costs can be avoided in the future?
- Are costs of inaction larger than emission control costs?

How large is monetized damage?

Health damage from ambient air pollution in Caucasus and Central Asia in 2010 (based on mortality presented in WHO&OECD, 2015



How large is monetized damage?



Sector-specific damage from air pollutants in the US, thousands €2015 /ton.

AFR – Agriculture,
Road – road transport,
Ind/PP – industries and energy,
DOM – residential combustion

(sources – Goodkind et al., 2019 , Schrader et al., 2018)

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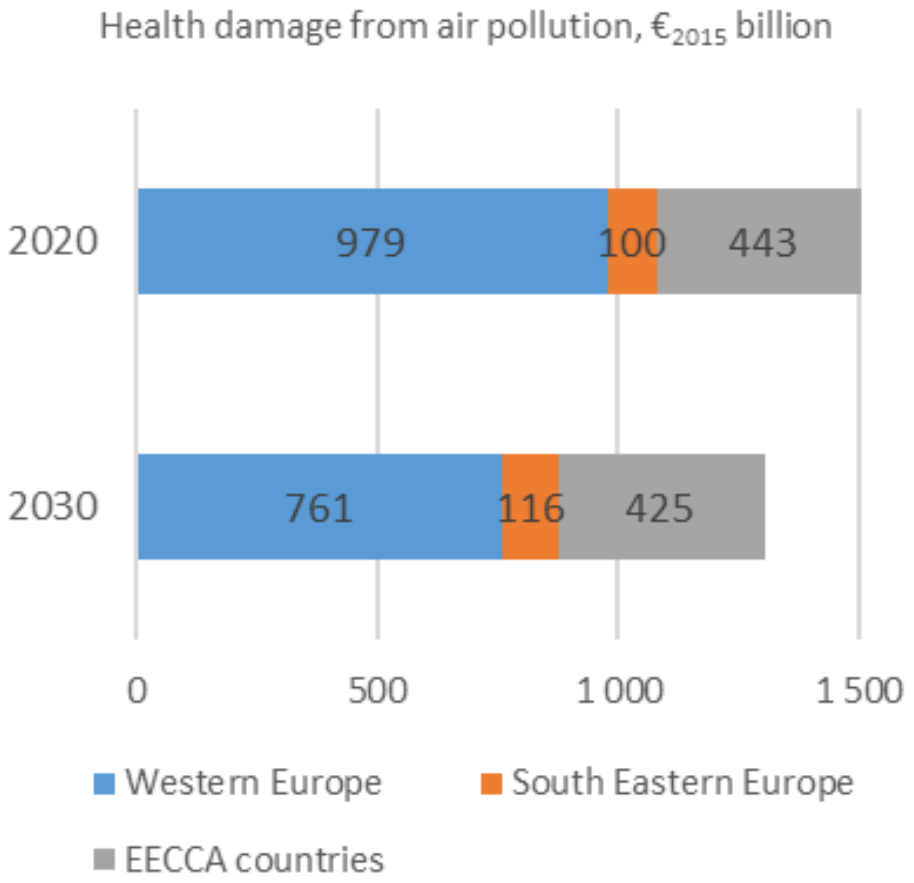
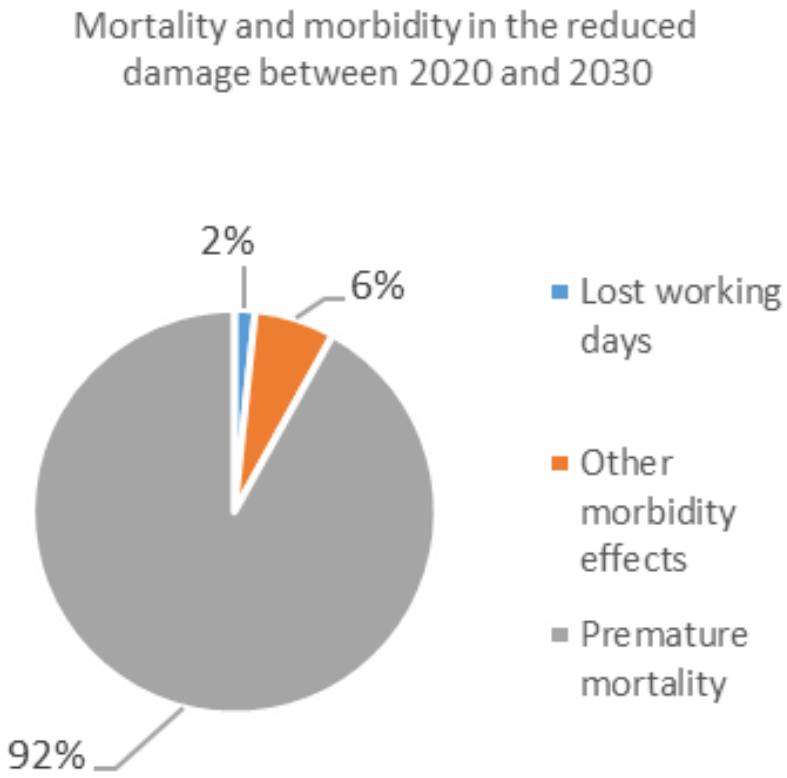
Benefit in future of expected action?

Estimated health benefits in European countries from agreed actions reducing air pollution (based on the current legislation scenario in Amann et al., 2020





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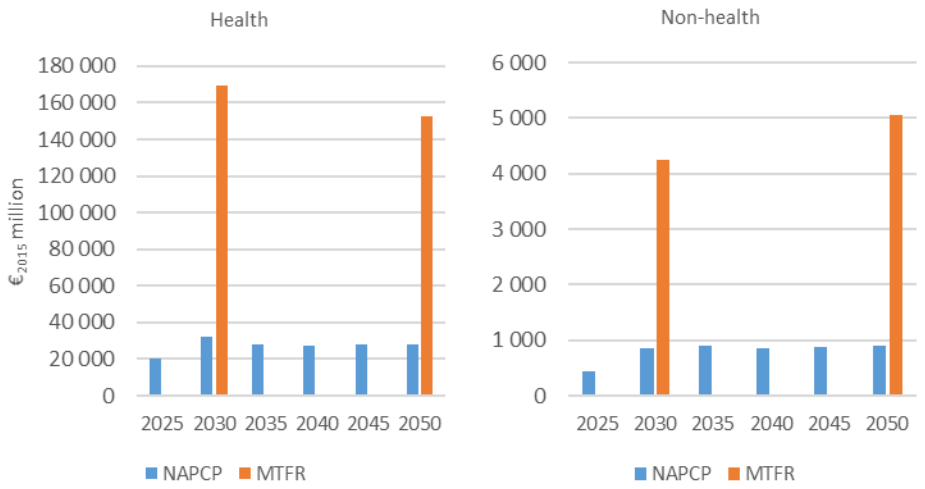
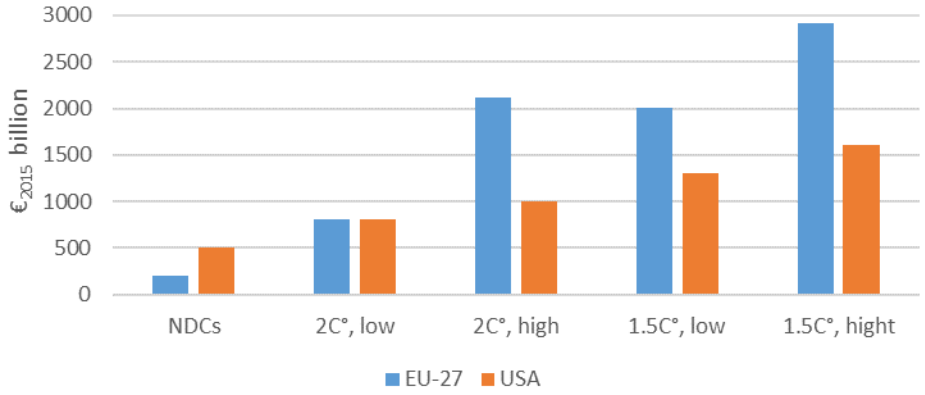
How large costs can be avoided?

- Not assessed for EECCA and South Western Europe

EU27 - Health benefits from NAPCP and MTFR (Amann et al., 2020)



Cumulative health co-benefits (VSL) from climate policies 2020-2050 (Markandya et al., 2018)



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Costs of inaction larger than emission control costs?

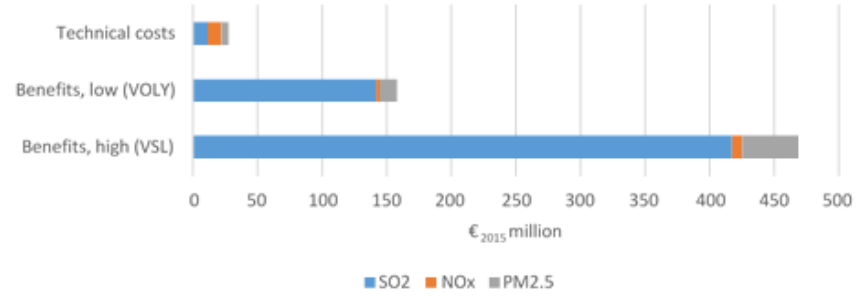
Case study of the Apatity coal plant

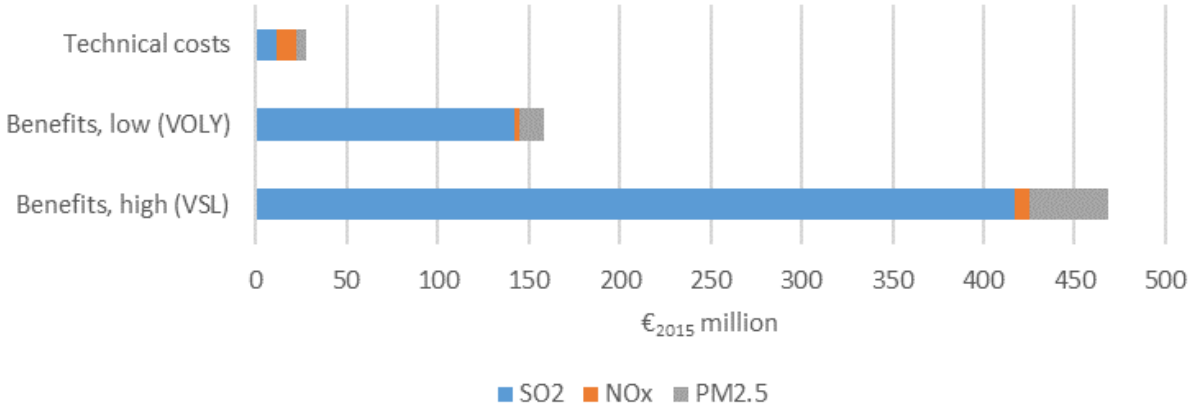
The Apatity combustion plant in North-Western Russia (1530 MWth thermal output) is in operation since 1959, using coal as main fuel to produce heat and power. Expert group on Techno-economic Issues (EGTEI)[1] estimated annual technical costs of installing equipment to reduce emissions of SO_2, NO_x and TSP – with wet flue gas desulphurisator, selective catalytic reduction, and electrostatic precipitator, respectively (see Table 5). Costs of avoided damage to health, crops and materials due to these abatement techniques are estimated by applying country-specific unit damage costs as in Schucht et al., 2021[2] (see Table 5 for high VSL) – the range is from €$_{2015}$ 158 million to €$_{2015}$ 469 million, depending on the chosen metric for health valuation. Irrespective of whether VSL or VOLY is chosen, total benefits from avoided damage significantly exceed costs. The total annual costs are estimated at €$_{2015}$ 27.4 million, so the benefit-to-cost ratio lies between 6 and 17 (see Figure 24).

Table 1: Parameters used for calculation of costs and benefits of installation of cleaning technologies at Apatity coal plant, based on EGTEI, 2011[1], Schucht et al., 2021[2], and GAINS model scenarios as in Amann et al., 2020[3].

Pollutant	Emissions in 2008/2010, kt	Removal efficiency of equipment, %	Removed emissions, kt	Technical costs, €$_{2015}$ million	Avoided damage, €$_{2015}$ million	
					Low VOLY	High VSL
TSP	6.23	99.9%	6.18	5.3	-	-
$PM_{2.5}$	0.37	96%	0.36		13	44
NO_x	2.4	75.4%	1.8	10.5	2.7	7.9
SO_2	12.6	95.4%	12.0	11.6	142	417
Total	-	-	-	27.4	158	469

Figure 1: Costs and benefits of installation of cleaning technologies at Apatity coal plant, based on EGTEI, 2011[1] and Schucht et al., 2021[2].





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Thanks for your attention

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